REMARKS

I. Status of Claims

Claims 19-82 are currently pending. The claims are not amended herein.

II. Rejections Under 35 U.S.C. § 112

The Examiner rejected claims 54 and 55 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. Office Action at 2. Specifically, the Examiner takes the position that the recitation of thickeners as additives in claim 54 "will affect the viscosity of the composition of the base claim, and it is not clear whether the viscosity limitation of claim 19 can be consistently applie[d] to claim 54." *Id.* Applicants respectfully disagree.

Applicants note initially that claim 19 recites a liquid cosmetic composition comprising at least one liquid fatty alcohol containing at least one cationic surfactant, at least one ceramide compound, and at least one cationic surfactant, wherein the composition has a viscosity of less than or equal to 1,000 cP. Applicants point out that "comprising" is open claim language, thus, claim 19 itself encompasses any range of compositions so long as those compositions meet the minimum limitations of the claims, for instance, that the compositions are liquid cosmetic compositions having a viscosity of less than or equal to 1,000 cP. Thus, Applicants submit that the recitation of possible additives in claim 54, for example, thickeners, does nothing more than identify and claim exemplary additives which may be included in the compositions as defined by the open claim language of claim 19. Accordingly, Applicants assert that the rejection of claims 54 and 55 are improper and request that the Examiner withdraw the rejection.

III. Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 19, 27-31, 35-54, 56, 57, 61-64, 69-71, 74, and 79-81 under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 5,693,677 to Lambers et al. ("*Lambers*") in view of U.S. Patent No. 5,939,082 to Oblong et al. ("*Oblong*"). Office Action at 3. Claims 19, 20, 27-29, 32, 33, 52-54, 61, 56-58, 64-66, 69, 72-76, and 82 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 6,110,450 to Bergmann ("*Bergmann*") in view of Flick, Cosmetic and Toiletry Formulations, 1995 ("*Flick*"). *Id.* at 4-5. Claims 21-26, 34, 59, 60, 67, 68, and 77-78 are rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over *Bergmann* and *Flick* and further in view of U.S. Patent No. 6,312,674 to Maubru ("*Maubru*"). *Id.* at 5-6. The Examiner also rejected claims 35-51, 62, 63, 70, 71, 80, and 81 under 35 U.S.C. § 103(a) as allegedly unpatentable over *Bergmann*, *Flick*, and *Maubru*, and further in view of U.S. Patent No. 6,120,757 to Dubief et al. ("*Dubief*"). *Id.* at 7-8. Finally, the Examiner rejected claims 35-51, 55, 62, 63, 70, 71, 80, and 81 under 35 U.S.C. § 103(a) as allegedly unpatentable over *Bergmann* and *Flick*, and further in view of U.S. Patent No. 5,587,155 to Ochiai. ("*Ochiai*"). *Id.* at 8.

A. Rejection Over *Lambers* and *Oblong*

Lanbers relates to ceramide III derivatives for topical application to the skin. *See* abstract. *Lambers* describes that the ceramide III derivatives are soluble in various solvents, including isocetyl alcohol, propylene glycol, and butylene glycol. *See* Example 2; col. 3, ll. 46-55. As the Examiner admits, *Lambers* does not teach compositions comprising cationic surfactants. *Lambers* is also completely silent with respect to compositions having a viscosity of less than or equal to 1,000 cP. Indeed, the only

exemplary formulation provided by *Lambers* is in the form of a cream. *See* Example 4, col. 8, ll. 50-54.

Oblong is directed to topical compositions comprising a vitamin B_3 compound for regulating skin condition. *See* abstract. The composition may comprise ceramides as an optional additive. *See* col. 29, ll. 21-22. The disclosed compositions may also comprise a surfactant chosen cationic, anionic, zwitterionic, and amphoteric surfactants. *See* col. 13, l. 66 - col. 14, l. 1. The composition may be in the form of an emulsion having a viscosity of about 50 centistokes or less. *See* col. 8, ll. 20-25.

Lambers is silent with respect to cationic surfactants and the viscosity of the composition, thus, the Examiner seeks to make up for these deficiencies by combining its teachings with those of *Oblong*. The Examiner takes the position that *Oblong* teaches that cationic surfactants stabilize oil-in-water emulsions and teach low viscosity compositions having a viscosity of about 50 cps or less. *See* Office Action at 3. Applicants respectfully disagree for at least the reasons discussed below.

Applicants initially note that the Examiner incorrectly asserts that *Oblong* teaches compositions having a viscosity of about 50 cps or less. In fact, *Oblong* teaches a viscosity of about 50 centistokes (cSt) or less. *See* col. 8, ll. 20-25. Centipoise (cP) is a measure of dynamic viscosity (Newton•second/meter^2), whereas centistoke (cSt) is a measure of kinematic viscosity (meter^2/second). *See* Young et al., Fluid Mechanics, 2nd ed., John Wiley & Sons: New York (2001), pp. 11-13 (Exhibit A). These measurements are entirely different, and thus, the units cP and cSt cannot be equated. As such, neither *Lambers* nor *Oblong* teach a composition having a viscosity of less than or equal to 1,000 cP. For at least this reason, *Lambers* and *Oblong*, either alone or in

combination, do not teach each and every element of the claimed invention and the rejection should be withdrawn.

B. Rejection Over *Bergmann* and *Flick*

Bergmann relates to hair care compositions comprising at least one ceramide and/or glycoceramide and phytantriol. *See* abstract. *Bergmann* teaches a shampoo having a viscosity between 4,000 and 7,000 cps. *See* col. 8, ll. 42-43. *Bergmann* does not teach nor suggest a liquid cosmetic composition, as presently claimed.

Flick relates to a hair liquid comprising various humectants and 2-hexyldecyl alcohol. *See* page 65. The hair liquid has a viscosity of 6 cps. *Flick* is completely silent with respect to cosmetic compositions comprising ceramides and cationic surfactants. *Flick* merely describes an arbitrary hair liquid composition having a low viscosity.

The Examiner alleges that "[s]ince *Bergmann* teaches to make a hair liquid composition, the skilled artisan would have had a reasonable expectation of successfully making a hair liquid formulation of low viscosity which is within the viscosity limitation of the claimed invention." Office Action at 5. Applicants respectfully disagree with the Examiner's position and traverse this rejection for the reasons below.

As discussed in the instant specification:

> Ceramides are generally formulated in thick compositions (cream or gel) containing thickeners with the aim of improving the stability and the suspension of the ceramides in aqueous compositions. Liquid products apply better to the hair and become homogeneously distributed. However, it is difficult to obtain stable aqueous liquid compositions, containing water-insoluble compounds such as ceramide-type compounds.

Instant specification at p. 2, ll. 1-9.

While *Flick* may provide some very basic disclosure that liquid hair compositions may be formulated, *Flick* provides absolutely no guidance with respect to the formation of a low viscosity liquid hair composition <u>comprising a ceramide</u>. As discussed above, the problem encountered previously in the prior art was obtaining stable liquid compositions containing ceramides. Thus, general teachings of liquid hair compositions which do not comprise ceramides, such as those of *Flick*, offer absolutely no guidance with respect to this problem. The mere fact that the compositions of both *Bergmann* and *Flick* include a fatty alcohol is not a sufficient nexus which would lead a skilled artisan to apply the teachings of *Flick* to the composition of *Bergmann*. In addition, in view of the general knowledge in the art that ceramides are not stable in liquid compositions, the skilled artisan would be aware that the general teachings of liquid hair compositions in *Flick* do not apply to compositions comprising ceramides. As such, the skilled artisan, upon reading *Flick*, would have no reason to apply its teachings to those of *Bergmann*. For at least this reason, the present invention is not obvious in view of *Bergmann* and *Flick* and this rejection should be withdrawn.

C. Rejection Over *Bergmann*, *Flick*, and *Maubru*

The Examiner acknowledges that "*Bergmann* and *Flick* fail to teach the specific ceramides of the instant claims." Office Action at 5. In an attempt to make up for this deficiency, *Maubru* is cited for the ceramides disclosed therein and their use in hair cosmetic compositions. *Id.* at 6. The Examiner states that it would have been obvious to modify "the compositions of the combined references by adding the ceramides of Maubru . . . because 1) both Bergman[n] and Maubru teach using ceramides in hair protecting compositions. . ." *Id.* Applicants respectfully disagree and traverse this rejection.

Maubru is directed to compositions for bleaching or permanently reshaping the hair comprising at least one ceramide-type compound and at least one oxidizing agent. *See* abstract. Applicants submit that the Examiner has failed to set forth a *prima facie* case of obviousness at least for the reason that *Maubru* does not make up for the deficiencies in the combination of *Bergmann* and *Flick*, as highlighted above. Specifically, Applicants reiterate their arguments of record that *Maubru* fails to cure the lack of motivation and reasonable expectation of success in combining the teachings of *Bergmann* and *Flick*, at least because *Maubru* also fails to teach a liquid composition comprising at least one cationic surfactant, at least one liquid fatty alcohol, and at least one ceramide compound, wherein the composition has a viscosity of less than or equal to 1,000 cP, as presently claimed. Moreover, in light of the discussion above regarding the instability of ceramide compounds in liquid compositions, the skilled artisan could not have a reasonable expectation of success in combining the teachings of *Bergmann*, *Flick*, and *Maubru* to achieve the presently claimed composition. As such, a *prima facie* case of obviousness cannot rest on the combination of these references and the rejection should be withdrawn.

D. Rejection Over *Bergmann*, *Flick*, *Maubru*, and *Dubief*

The Examiner acknowledges that the "combined references [*Bergmann* in view of *Flick* and *Maubru*] fail to teach the specific cationic surfactants of the instant claims." Office Action at 7. The Examiner attempts to rely on *Dubief* to make up for this deficiency. *Dubief* relates to a composition in the form of an aqueous dispersion comprising at least one liposoluble agent of the organosiloxane type containing a benzalmalonate function and at least one water-insoluble cationic surfactant." *See* abstract. *Dubief* teaches ultraviolet-screening, e.g., sun-screening, compositions for

keratin fibers such as the hair. *See id.* *Dubief* further discloses that various optional additives, such as ceramides, may be included in such compositions. *See* col. 6, ll. 34-41.

Applicants submit that the Examiner has failed to set forth a *prima facie* case of obviousness at least for the reason that *Dubief* does not make up for the deficiencies in the combination of *Bergmann*, *Flick*, and *Maubru*, as highlighted above. Specifically, Applicants note that *Dubief* also fails to teach a liquid composition comprising at least one cationic surfactant, at least one liquid fatty alcohol, and at least one ceramide compound, wherein the composition has a viscosity of less than or equal to 1,000 cP, as presently claimed. Moreover, in light of the discussion above regarding the instability of ceramide compounds in liquid compositions, the skilled artisan could not have a reasonable expectation of success in combining the teachings of *Bergmann*, *Flick*, *Maubru*, and *Dubief* to achieve the presently claimed composition. As such, a *prima facie* case of obviousness cannot rest on the combination of these references and the rejection should be withdrawn.

E. Rejection Over *Bergmann, Flick*, and *Ochiai*

The Examiner concedes that "*Bergmann* fails to teach 18-methyleicosanoic acid and quaternary ammonium cationic surfactants." Office Action at 8. The Examiner attempts to make up for this deficiency by relying on *Ochiai*. *Ochiai* teaches hair cosmetic compositions comprising at least one fatty acid, fatty acid salt, or fatty acid ester, at least one aromatic alcohol, and at least one cationic surfactant. *See* abstract. *Ochiai* does not mention or suggest compositions comprising ceramides.

Applicants submit that the Examiner has failed to set forth a *prima facie* case of obviousness at least for the reason that *Ochiai* does not make up for the deficiencies in

the combination of *Bergmann* and *Flick*, as highlighted above. Specifically, Applicants note that *Ochiai* is completely silent with respect to compositions comprising ceramides, much less liquid compositions comprising at least one cationic surfactant, at least one liquid fatty alcohol, and at least one ceramide compound, wherein the composition has a viscosity of less than or equal to 1,000 cP, as presently claimed. Moreover, in light of the discussion above regarding the instability of ceramide compounds in liquid compositions, the skilled artisan could not have a reasonable expectation of success in combining *Bergmann*, *Flick*, and *Ochiai* to achieve the presently claimed compositions. As such, a *prima facie* case of obviousness cannot rest on the combination of these references and the rejection should be withdrawn.

IV. Conclusion

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
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Dated: May 1, 2008

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PATENT
Customer No. 22,852
Attorney Docket No. 05725.0903-00000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
	)	
Shinichi YAMADA et al.	)	Group Art Unit: 1617
	)	
Application No.: 09/857,495	)	Examiner: Gina C. YU
	)	
Filed: June 28, 2001	)	Confirmation No.: 5364
	)	
For: COSMETIC COMPOSITION COMPRISING AT LEAST A CATION, A LIQUID FATTY ALCOHOL AND AT LEAST A CERAMIDE TYPE COMPOUND AND METHOD USING SAME	)	

Exhibit A

Young et al., Fluid Mechanics, 2nd ed., John Wiley & Sons: New York (2001), pp. 11-13.

A Brief Introduction to Fluid Mechanics

Second Edition

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PRODUCTION MANAGEMENT SERVICES York Production Services

This book was set in Times Roman by York Graphic Services and printed and bound by R.R. Donnelley & Sons. The cover was printed by Phoenix Color Corp.

This book was printed on acid-free paper. ♾

Library of Congress Cataloging in Publication Data:

Young, Donald F.

A brief introduction to fluid mechanics / Donald F. Young, Bruce R. Munson, Theodore H. Okiishi—2nd ed.

p. cm.

Includes bibliographical references.

ISBN 0-471-36243-3 (alk. paper)

1. Fluid mechanics. I. Munson, Bruce Roy, 1940– II. Okiishi, T. H. (Theodore Hisao), 1939– III. Title.

TA357.Y68 2000

620.1'06–dc21 00-025726

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

The weight, $\mathcal{W}$, of the air is equal to

$$\mathcal{W} = \rho g \times (\text{volume})$$
$$= (0.0102 \text{ slugs/ft}^3)(32.2 \text{ ft/s}^2)(0.84 \text{ ft}^3)$$

so that

$$\mathcal{W} = 0.276 \text{ lb} \qquad \text{(Ans)}$$

since 1 lb = 1 slug·ft/s^2.

1.6 Viscosity

The properties of density and specific weight are measures of the "heaviness" of a fluid. It is clear, however, that these properties are not sufficient to uniquely characterize how fluids behave since two fluids (such as water and oil) can have approximately the same value of density but behave quite differently when flowing. There is apparently some additional property that is needed to describe the "fluidity" of the fluid.

V1.1 Viscous fluids

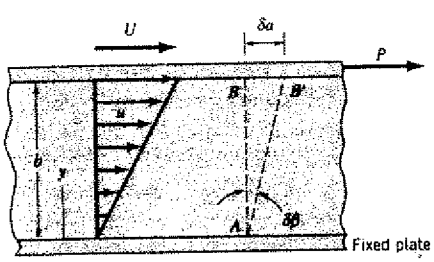
To determine this additional property, consider a hypothetical experiment in which a material is placed between two very wide parallel plates as shown in Fig. 1.2. The bottom plate is rigidly fixed, but the upper plate is free to move.

When the force P is applied to the upper plate, it will move continuously with a velocity U (after the initial transient motion has died out) as illustrated in Fig. 1.2. This behavior is consistent with the definition of a fluid—that is, if a shearing stress is applied to a fluid it will deform continuously. A closer inspection of the fluid motion between the two plates would reveal that the fluid in contact with the upper plate moves with the plate velocity, U, and the fluid in contact with the bottom fixed plate has a zero velocity. The fluid between the two plates moves with velocity $u = u(y)$ that would be found to vary linearly, $u = Uy/b$, as illustrated in Fig. 1.2. Thus, a *velocity gradient, du/dy*, is developed in the fluid between the plates. In this particular case the velocity gradient is a constant since $du/dy = U/b$, but in more complex flow situations this would not be true. The experimental observation that the fluid "sticks" to the solid boundaries is a very important one in fluid mechanics and is usually referred to as the *no-slip condition*. All fluids, both liquids and gases, satisfy this condition.

V1.2 No-slip condition

In a small time increment, δt, an imaginary vertical line AB in the fluid (see Fig. 1.2) would rotate through an angle, $\delta\beta$, so that

$$\tan \delta\beta \approx \delta\beta = \frac{\delta a}{b}$$



■ FIGURE 1.2 Behavior of a fluid placed between two parallel plates.

Since $\delta a = U\,\delta t$ follows that

$$\delta\beta = \frac{U\,\delta t}{b}$$

Note that in this case, $\delta\beta$ is a function not only of the force P (which governs U) but also of time. We consider the *rate* at which $\delta\beta$ is changing, and define the *rate of shearing strain*, $\dot{\gamma}$, as

$$\dot{\gamma} = \lim_{\delta t \to 0} \frac{\delta\beta}{\delta t}$$

which in this instance is equal to

$$\dot{\gamma} = \frac{U}{b} = \frac{du}{dy}$$

A continuation of this experiment would reveal that as the shearing stress, τ, is increased by increasing P (recall that $\tau = P/A$), the rate of shearing strain is increased in direct proportion—that is

$$\tau \propto \dot{\gamma}$$

or

$$\tau \propto \frac{du}{dy}$$

This result indicates that for common fluids such as water, oil, gasoline, and air the shearing stress and rate of shearing strain (velocity gradient) can be related with a relationship of the form

$$\tau = \mu \frac{du}{dy} \qquad \textbf{(1.8)}$$

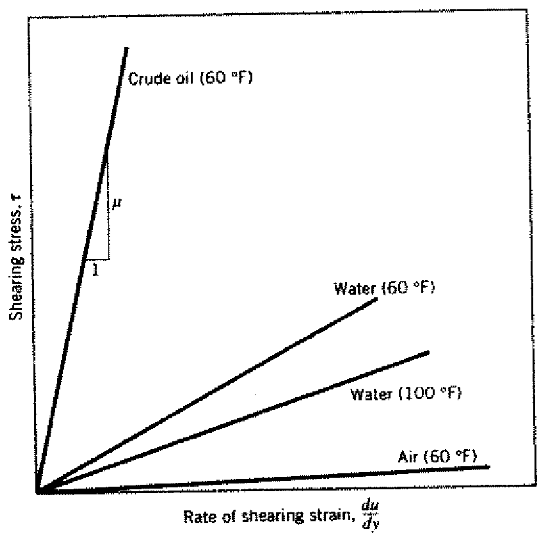
where the constant of proportionality is designated by the Greek symbol μ (mu) and is called the *absolute viscosity, dynamic viscosity,* or simply the *viscosity* of the fluid. In accordance with Eq. 1.8, plots of τ versus du/dy should be linear with the slope equal to the viscosity as illustrated in Fig. 1.3. The actual value of the viscosity depends on the particular fluid, and for a particular fluid the viscosity is also highly dependent on temperature as illustrated in Fig. 1.3 with the two curves for water. Fluids for which the shearing stress is *linearly* related to the rate of shearing strain (also referred to as rate of angular deformation) are designated as *Newtonian fluids.* Fortunately most common fluids, both liquids and gases, are Newtonian. A more general formulation of Eq. 1.8 which applies to more complex flows of Newtonian fluids, is given in Section 6.8.1.

V1.3 Capillary tube viscometer

Fluids for which the shearing stress is not linearly related to the rate of shearing strain are designated as *non-Newtonian fluids.* It is beyond the scope of this book to consider the behavior of such fluids, and we will only be concerned with Newtonian fluids.

From Eq. 1.8 it can be readily deduced that the dimensions of viscosity are FTL^{-2}. Thus, in BG units viscosity is given as $lb{\cdot}s/ft^2$ and in SI units as $N{\cdot}s/m^2$. Values of viscosity for several common liquids and gases are listed in Tables 1.4 through 1.7. A quick glance at these tables reveals the wide variation in viscosity among fluids. Viscosity is only mildly dependent on pressure and the effect of pressure is usually neglected. However, as previously mentioned, and as illustrated in Appendix B (Figs. B.1 and B.2), viscosity is very sensitive to temperature.

V1.4 Non-Newtonian behavior



■ FIGURE 1.3 **Linear variation of shearing stress with rate of shearing strain for common fluids.**

Quite often viscosity appears in fluid flow problems combined with the density in the form

$$\nu = \frac{\mu}{\rho}$$

This ratio is called the *kinematic viscosity* and is denoted with the Greek symbol ν (nu). The dimensions of kinematic viscosity are L^2/T, and the BG units are ft^2/s and SI units are m^2/s. Values of kinematic viscosity for some common liquids and gases are given in Table 1.4 through 1.7. More extensive tables giving both the dynamic and kinematic viscosities for water and air can be found in Appendix B (Tables B.1 through B.4), and graphs showing the variation in both dynamic and kinematic viscosity with temperature for a variety of fluids are also provided in Appendix B (Figs. B.1 and B.2).

Although in this text we are primarily using BG and SI units, dynamic viscosity is often expressed in the metric CGS (centimeter-gram-second) system with units of $dyne \cdot s/cm^2$. This combination is called a *poise*, abbreviated P. In the CGS system, kinematic viscosity has units of cm^2/s, and this combination is called a *stoke*, abbreviated St.

EXAMPLE 1.3

A dimensionless combination of variables that is important in the study of viscous flow through pipes is called the *Reynolds number*, Re, defined as $\rho VD/\mu$ where ρ is the fluid density, V the mean fluid velocity, D the pipe diameter, and μ the fluid viscosity. A Newtonian fluid having a viscosity of $0.38\ N \cdot s/m^2$ and a specific gravity of 0.91 flows through a 25-mm-diameter pipe with a velocity of 2.6 m/s. Determine the value of the Reynolds number using (a) SI units, and (b) BG units.